



**Capt Ed "Clyde" Langford
Director Aviation Safety
Naval Safety Center**



Agenda

- **Goals**
- **Aviation Mishaps
Overview**
- **PMV / Off-Duty Mishaps**
- **Fatigue**
- **Risk Management**
- **Tools for Success**
- **Q & A**

**What's wrong with this
picture?**





**Here's your science fact for the week:
Newton's first law**

**... a moving object will keep moving at the same speed
and in the same direction unless acted on by some force.**

8:56

Bucketman Returns!



20 Apr 07



Temporary Insanity II



Fatal motorcycle accident

April 2007, 1:00
am

In excess of 100
mph





The Safest Forehead

Naval Safety Center



Providing aviation, afloat, and shore support to Navy and Marine Corps commands



NSC at your service... for free!

Let our experience, expertise and unrivaled commitment to safety work for you.

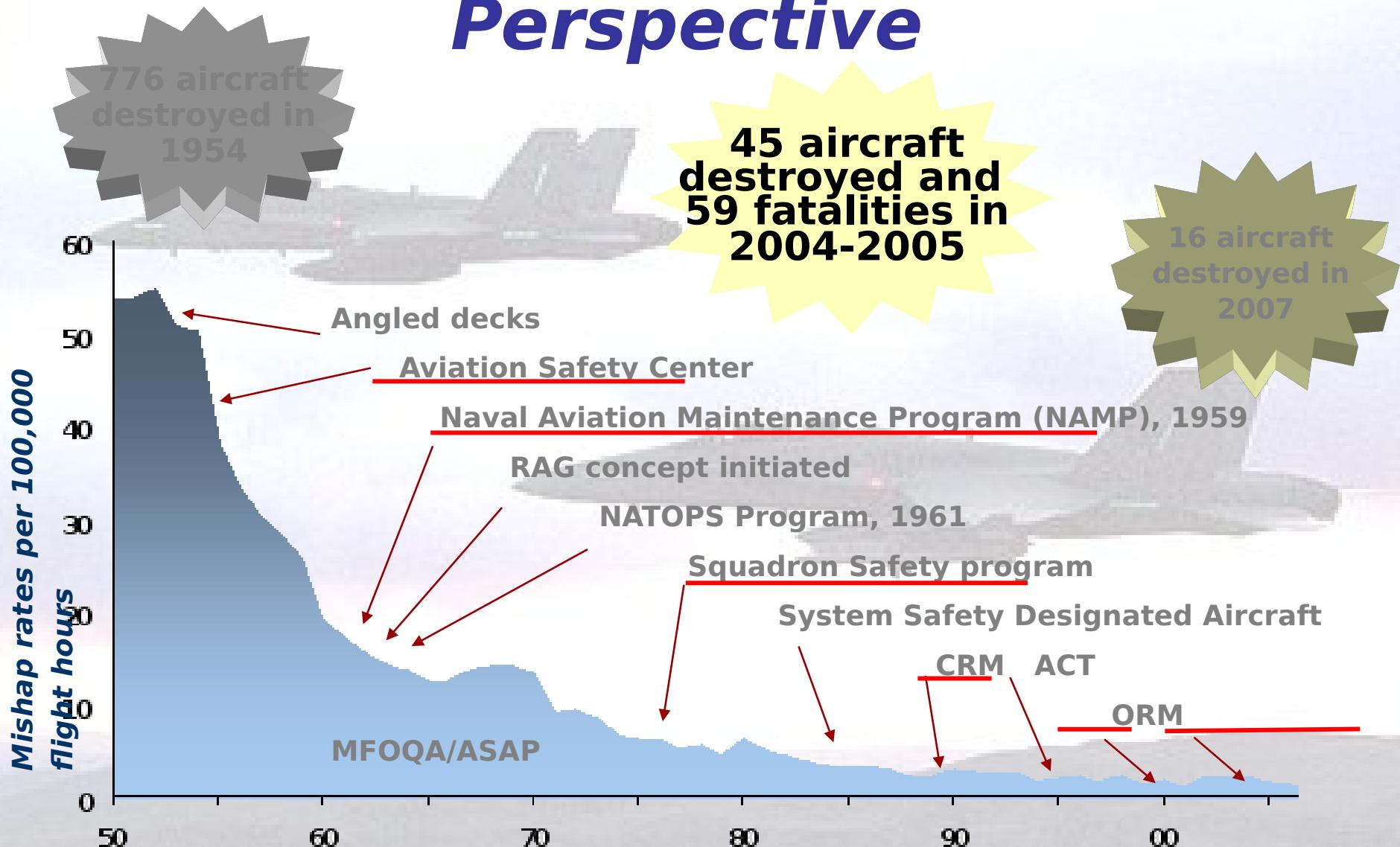
**Mishap Investigations
Surveys
Assist Visits
Data Analysis
Workshops
Publications
Website
Presentations
Exhibits**

Call 757-444-3520 (DSN 564) or visit our website: www.safetycenter.navy.mil

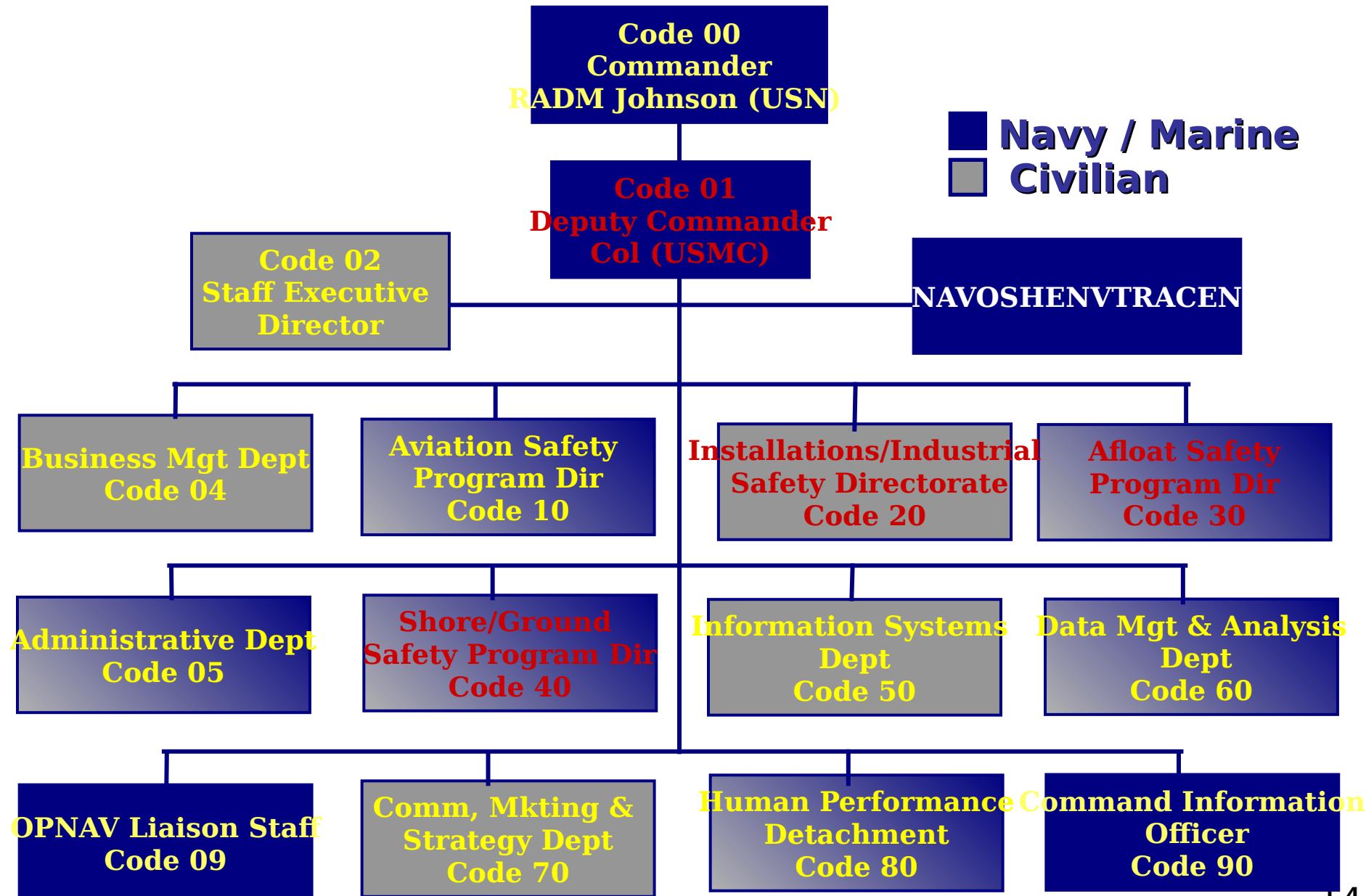
Naval Safety Center provides safety assistance and advice to the CNO, CMC, and the Deputy Assistant SECNAV for Safety in order to:

- ✓ **enhance the warfighting capability** of the Navy and Marine Corps,
- ✓ **preserve resources** and
- ✓ **improve combat readiness** by preventing mishaps

Aviation Safety Historical Perspective



Commander, Naval Safety Center



Aviation Directorate Organization

Navy / Marine
Civilian

**Aviation
Directorate
Code 10**

**Executive
Assistant
Code 10A**

**Aircraft
Operations
Code 11**

**Aircraft
Maintenance
Code 12**

**Aircraft Mishap
Investigation
Code 13**

**Aero-Medical
Code 14**

**Safety Culture
Code 15**

**ORM Cell
Code 16**

Cultural Mindsets

A photograph of a calm sea under a hazy, overcast sky. The horizon is visible in the distance, and the sky above is a uniform, pale grey. The water in the foreground is dark blue and shows small, gentle ripples. There are no clouds or other features in the sky.

Magnitude of Accidents

In FY07, Navy and Marine Corps Operational Mishaps Resulted In:

NAVY

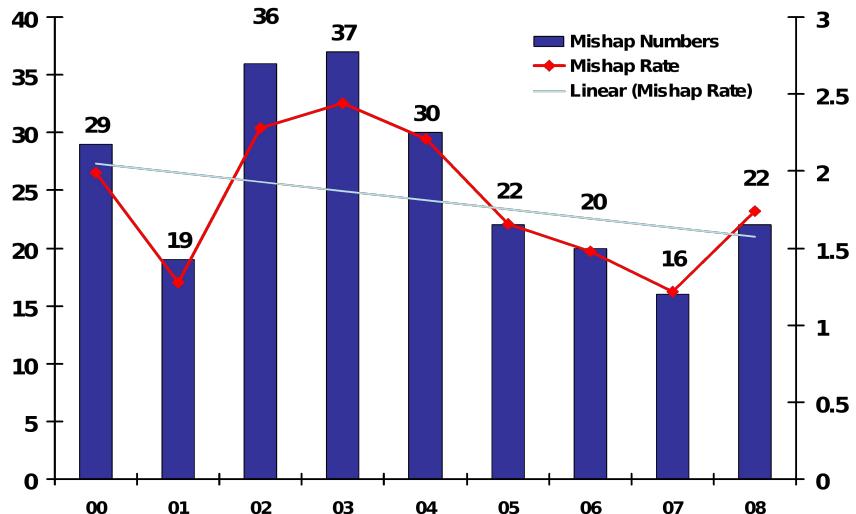
MARINE CORPS

- **1 Navy death every 77 hours (3.2 days)**
- **1 POV death every 112 hours (4.7 days)**
- **1 Aviation death every 36 days**
- **1 aircraft destroyed every 45 days**
- **\$940K a day in aviation losses**

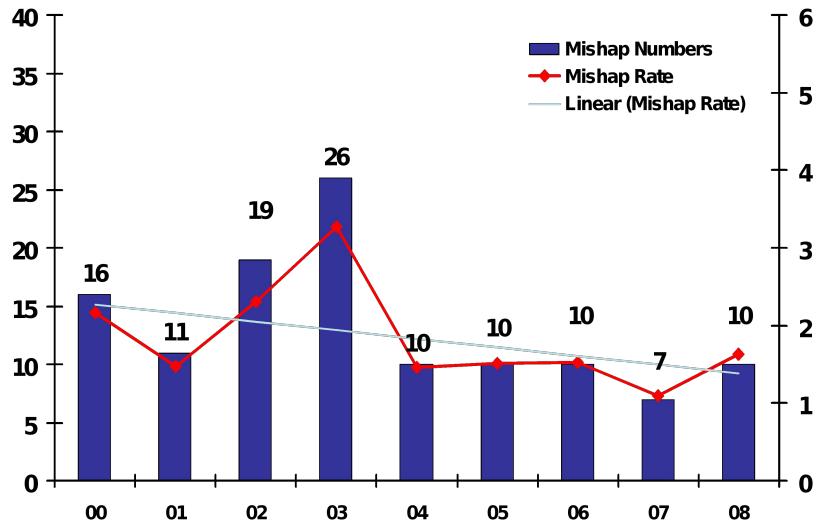
- **1 Marine death every 69 hours (2.9 days)**
- **1 POV death every 132 hours (5.5 days)**
- **1 Aviation death every 33 days**
- **1 Aircraft destroyed every 45 days**
- **\$463K a day in aviation losses**

CLASS A FLIGHT MISHAP RATES (FY00-08)

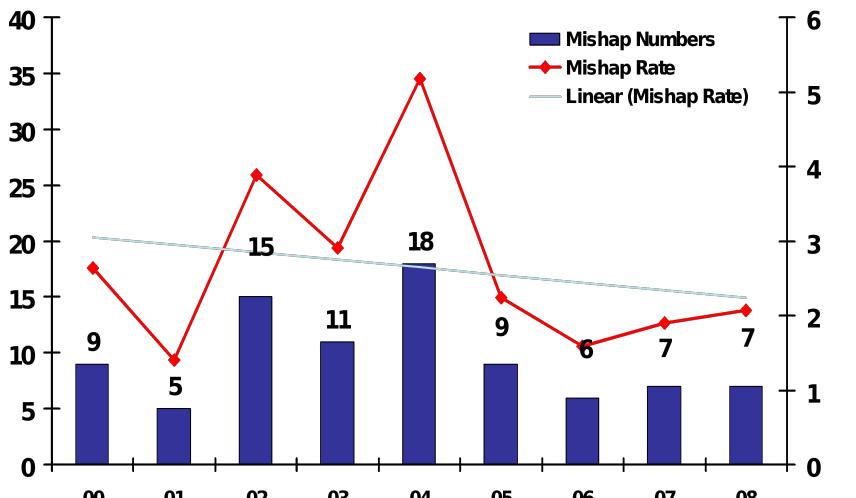
Class A Flight Mishap Rate



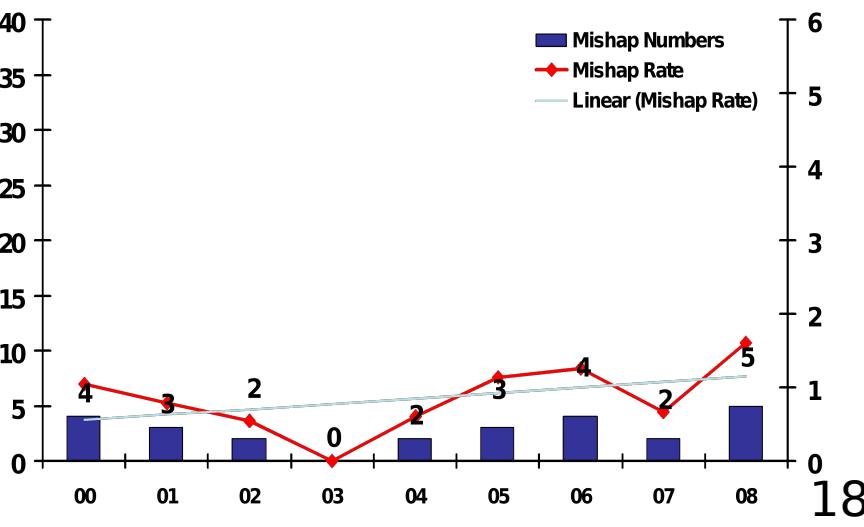
USN Class A FM Rate (All Platforms)



USMC Class A FM Rate (All Platforms)

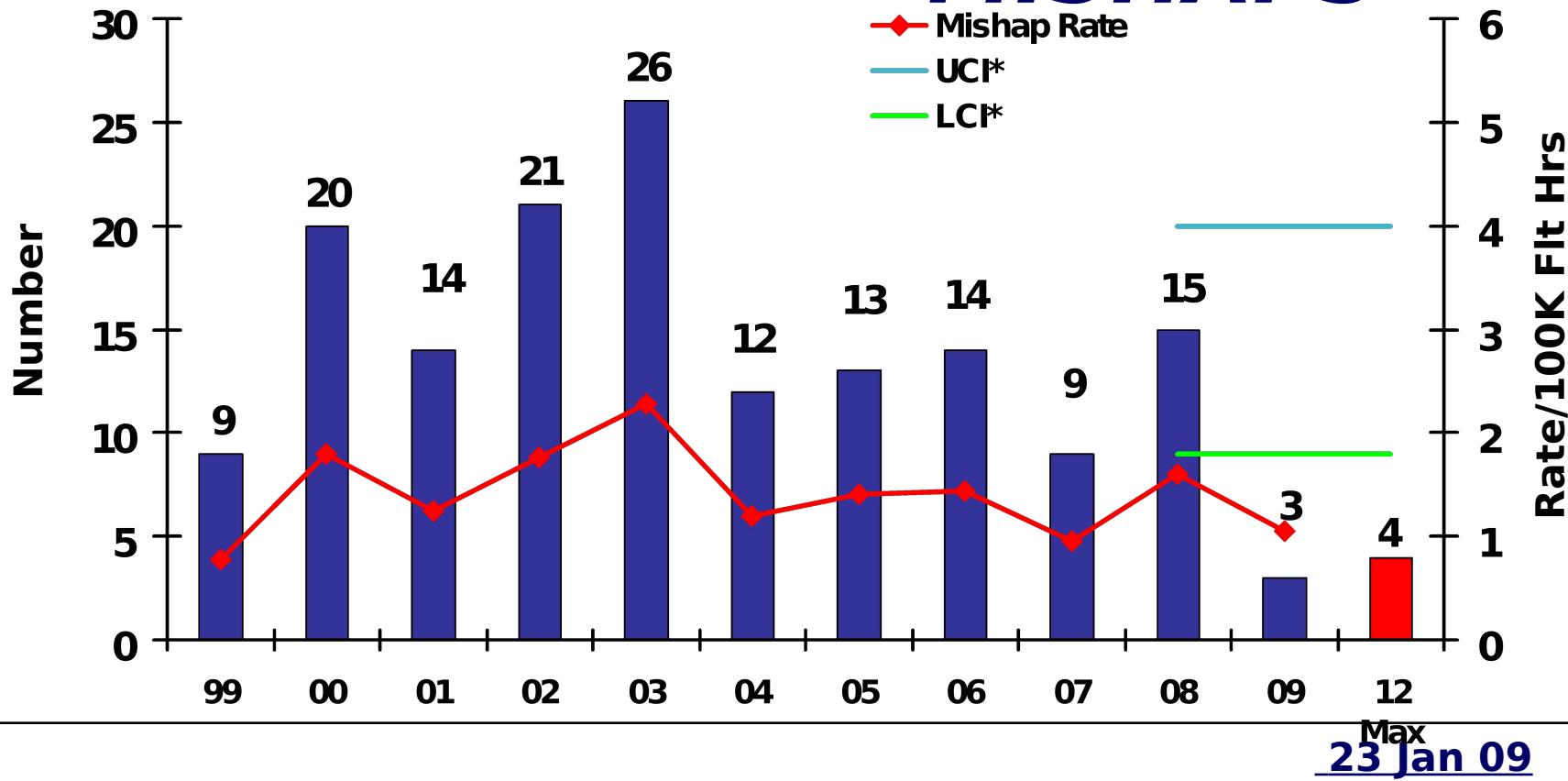


Training Class A FM Rate





CLASS A FLIGHT MISHAPS



23 Jan 08

Max
23 Jan 09

CLASS A MISHAPS/MISHAP RATE FY COMPARISON:

3 / 1.05

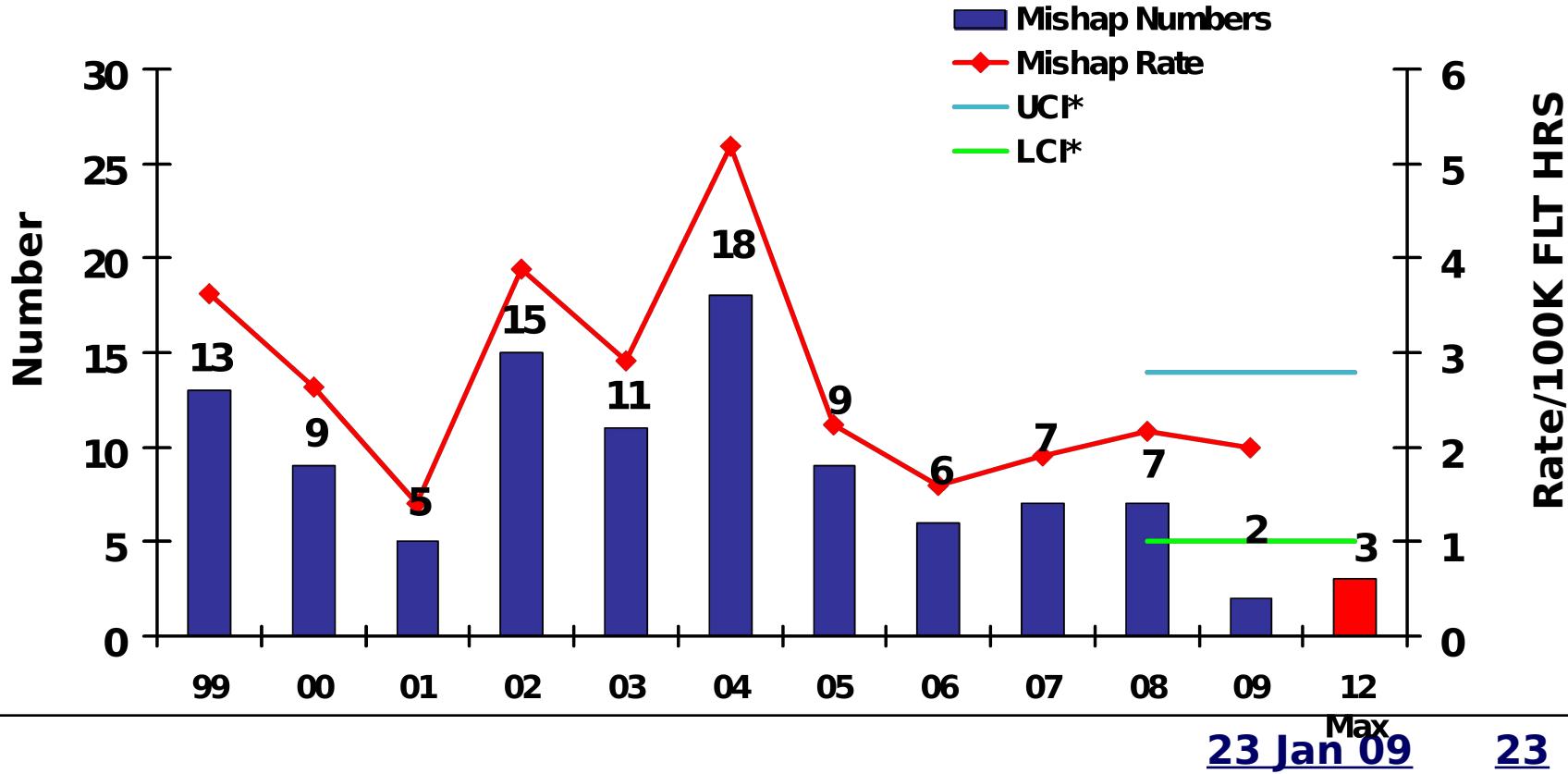
7 / 2.52

FY08 MISHAPS/MISHAP RATE: 15 / 1.60

10-YEAR AVERAGE (FY99-08) MISHAPS/MISHAP RATE: 15.3 / 1.45



CLASS A FLIGHT MISHAPS



Jan 08

2 / 2.01

CLASS A FM/FM RATE FY COMPARISON: 2 / 1.99

23 Jan 09

23

FY08 MISHAPS/MISHAP RATE: 7 / 2.16

10-YEAR AVERAGE (FY99-08) MISHAPS/MISHAP RATE: 10 / 2.75

*see last slide for definition of UCI/LCI

“Causal Factor: Human Error”

USN/USMC, FY03-07

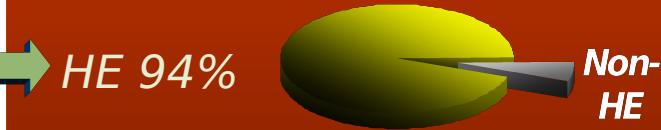
No. of Class A Mishaps

USN Aviation



81 of 86

→ ***HE 94%***

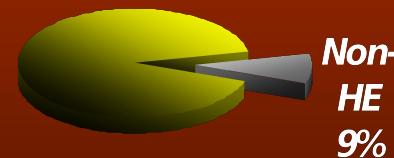


USMC Aviation



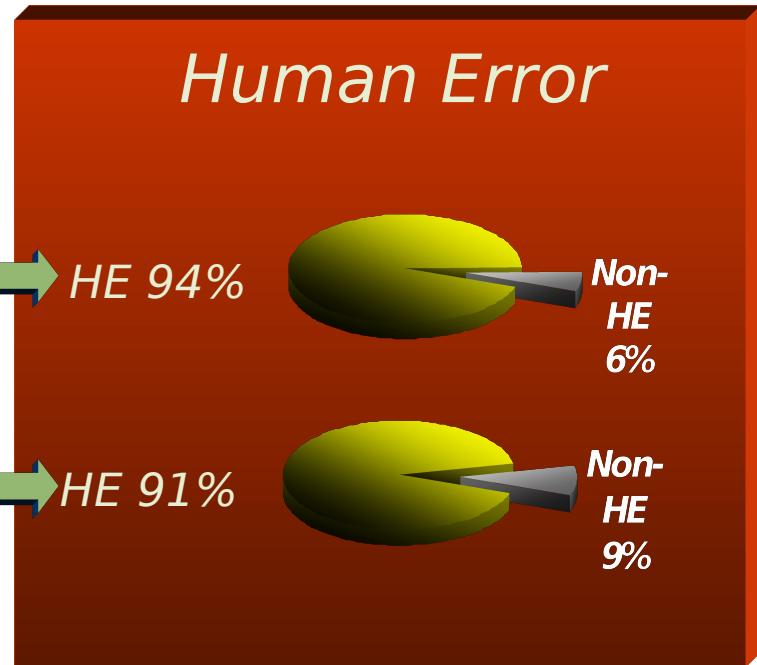
52 of 57

→ ***HE 91%***



Leading Causal Factors

- **Human Error (90%)**
 - Aircrew (breakdown in Crew Resource Management, poor decision making, failure to properly perform emergency procedures)
 - Supervisory (failure to provide adequate guidance and training)
- **Material/Systems Malfunction (10%)**
 - Material/component catastrophic failure (no human error involved)



“Causal Factor: Human Error”

TRENDS

Mishap Investigations

- Human error (aircrew):
Leading causal factors
 - Skill-based errors
 - Decision errorsLeading preconditions for errors
 - CRM failures
 - Adverse mental states
- Inexperience
- Training issues

TAKEAWAYS

- Adherence to basic rules, regulations and NATOPS procedures
- Proper pre- flight planning
- Training
- Proficiency
- Institutionalize ORM & CRM
- Enforce standards
- Increase checks and balances





RED VS. BLUE THREAT (FY91-Present)

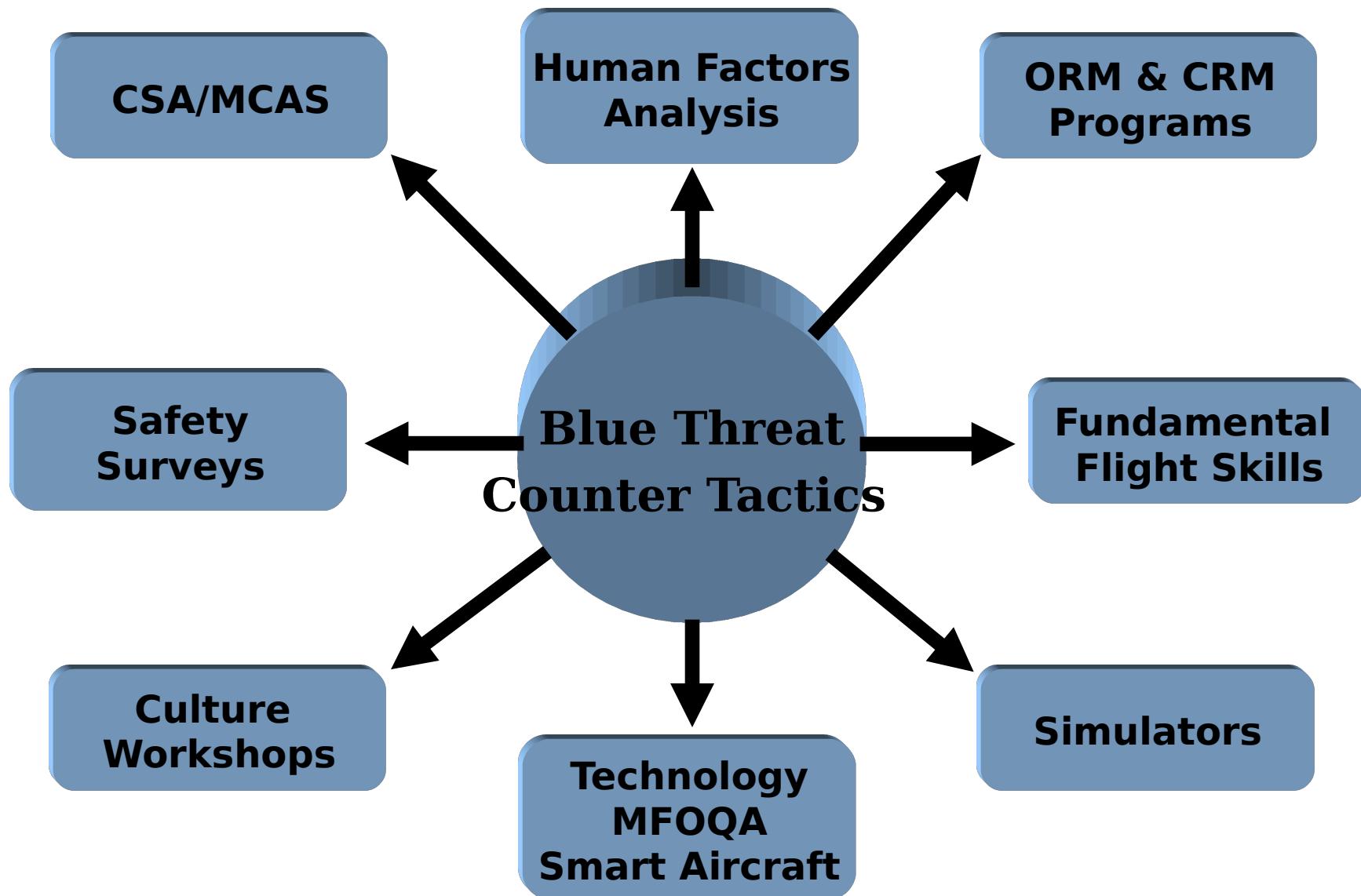
- **RED THREAT: Combat Losses**
- **18 Aircraft:**
 - Marine Corps -13
 - Navy - 5

vs.

- **BLUE THREAT:**
547 Aircraft

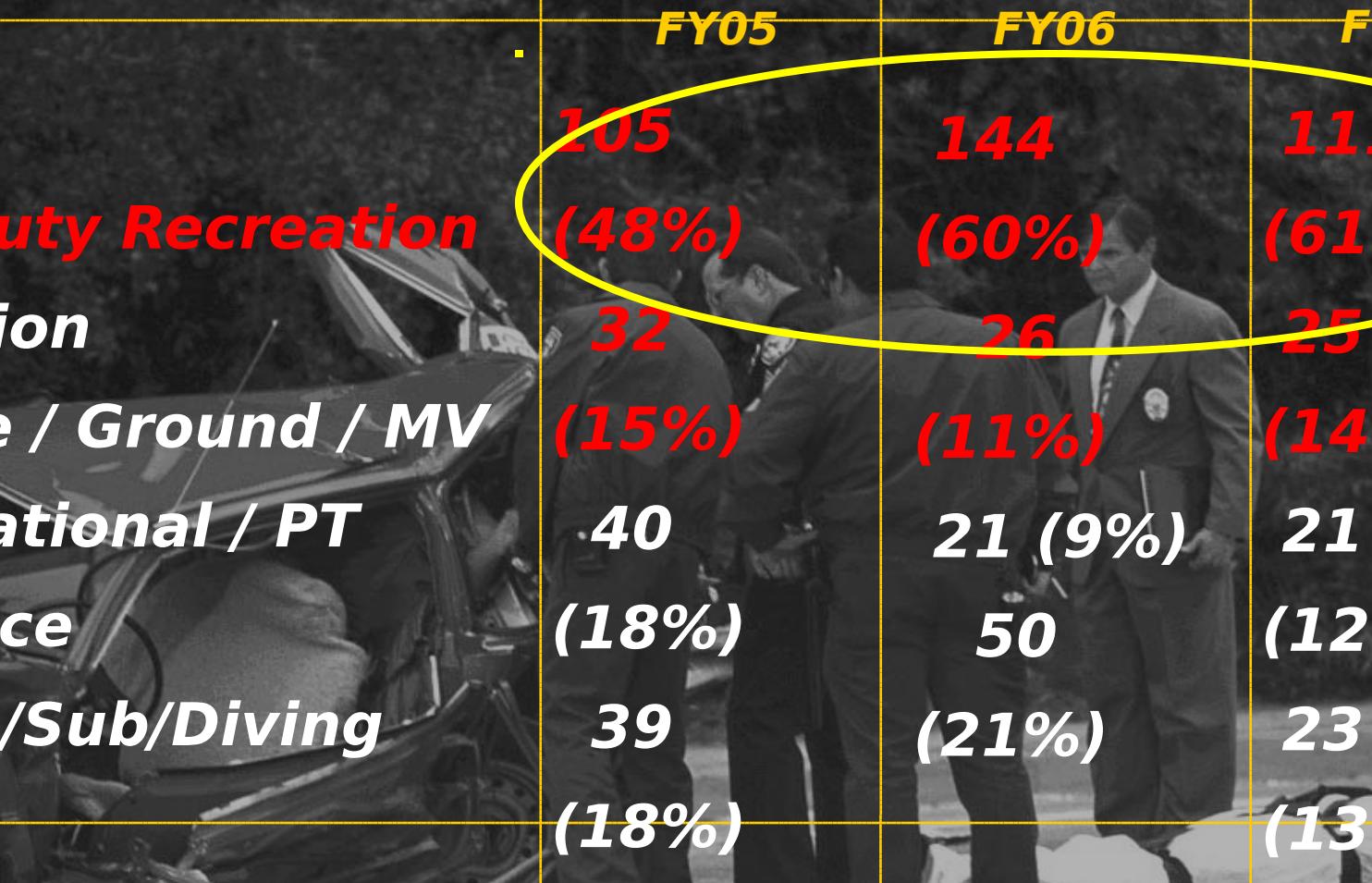


Blue Threat Mitigation Strategies



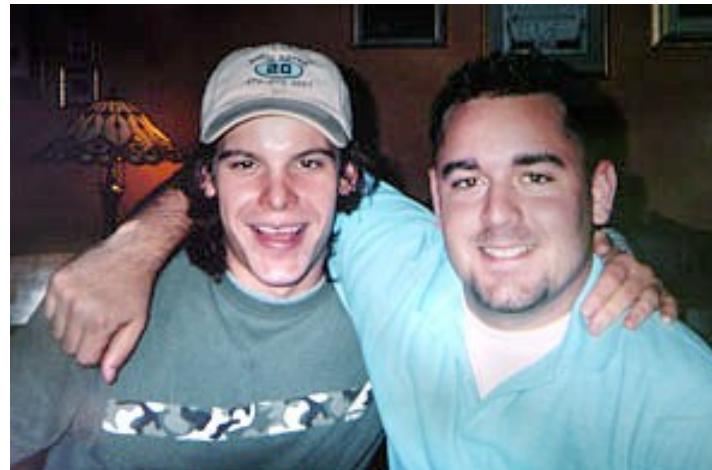
**What is the top killer of our
sailors?**

How Did Our Sailors and Marines Die?



	217 <i>Died in FY05</i>	241 <i>Died in FY06</i>	182 <i>Died in FY07</i>
PMV	105 (48%)	144 (60%)	111 (61%)
Off-Duty Recreation	32 (15%)	26 (11%)	25 (14%)
Aviation	40 (18%)	21 (9%)	21 (12%)
Shore / Ground / MV	39 (18%)	50 (21%)	23 (13%)
Operational / PT			
Surface			
Ships/Sub/Diving			

Night Time, Weekend Alcohol, Speed mix for Disaster



Service member and cousin were killed when the Acura they were traveling in hit the semi-trailer truck. The Acura, which investigators said was going more than 80 mph, crumpled on impact.

Factors In Traffic Deaths

(USN/USMC, FY02-06)

Fatigue is considered a major factor in traffic deaths, but is under-reported throughout the fleet.

FY02-06 Deaths: 627 (USN - 350) / (USMC - 277)

FY02: 140 (USN - 75) / (USMC - 65)

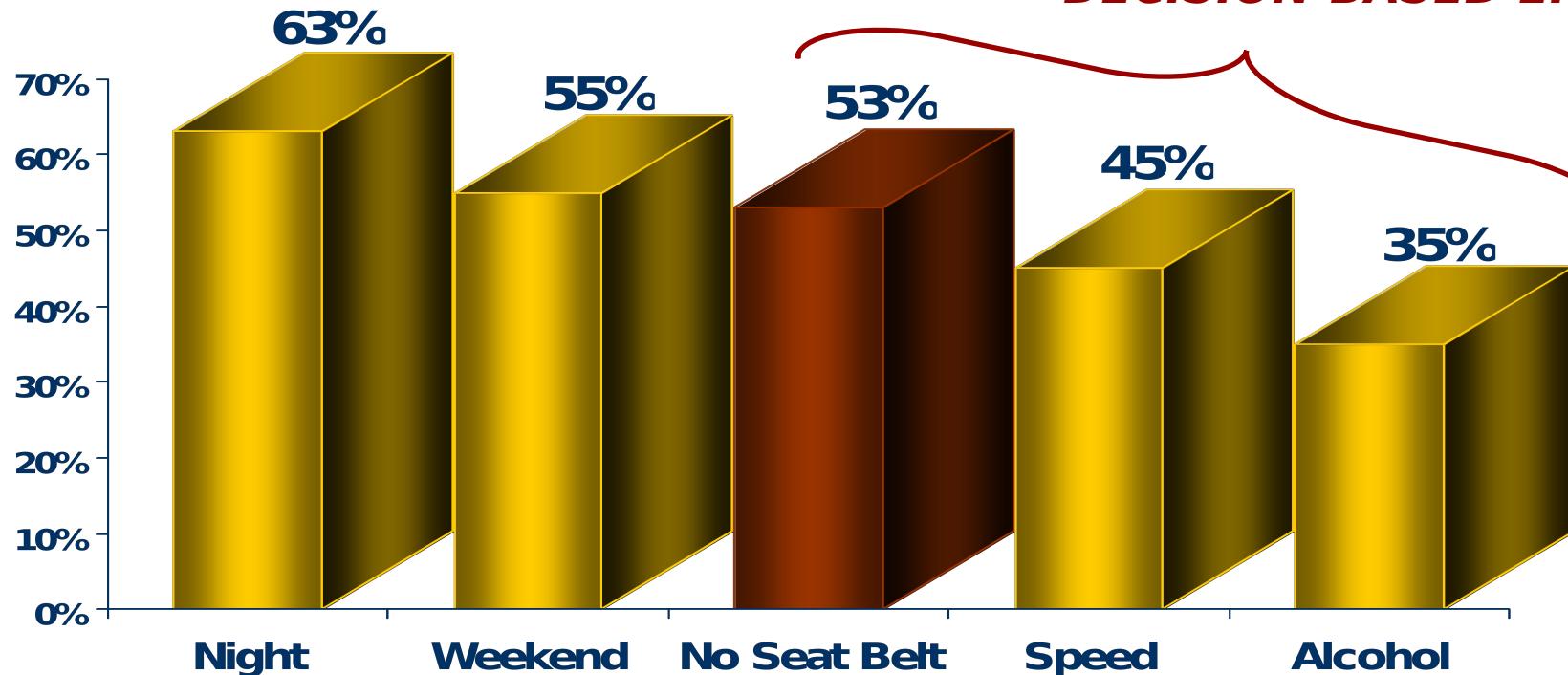
FY03: 119 (USN - 66) / (USMC - 53)

FY04: 119 (USN - 73) / (USMC - 46)

FY05: 105 (USN - 58) / (USMC - 47)

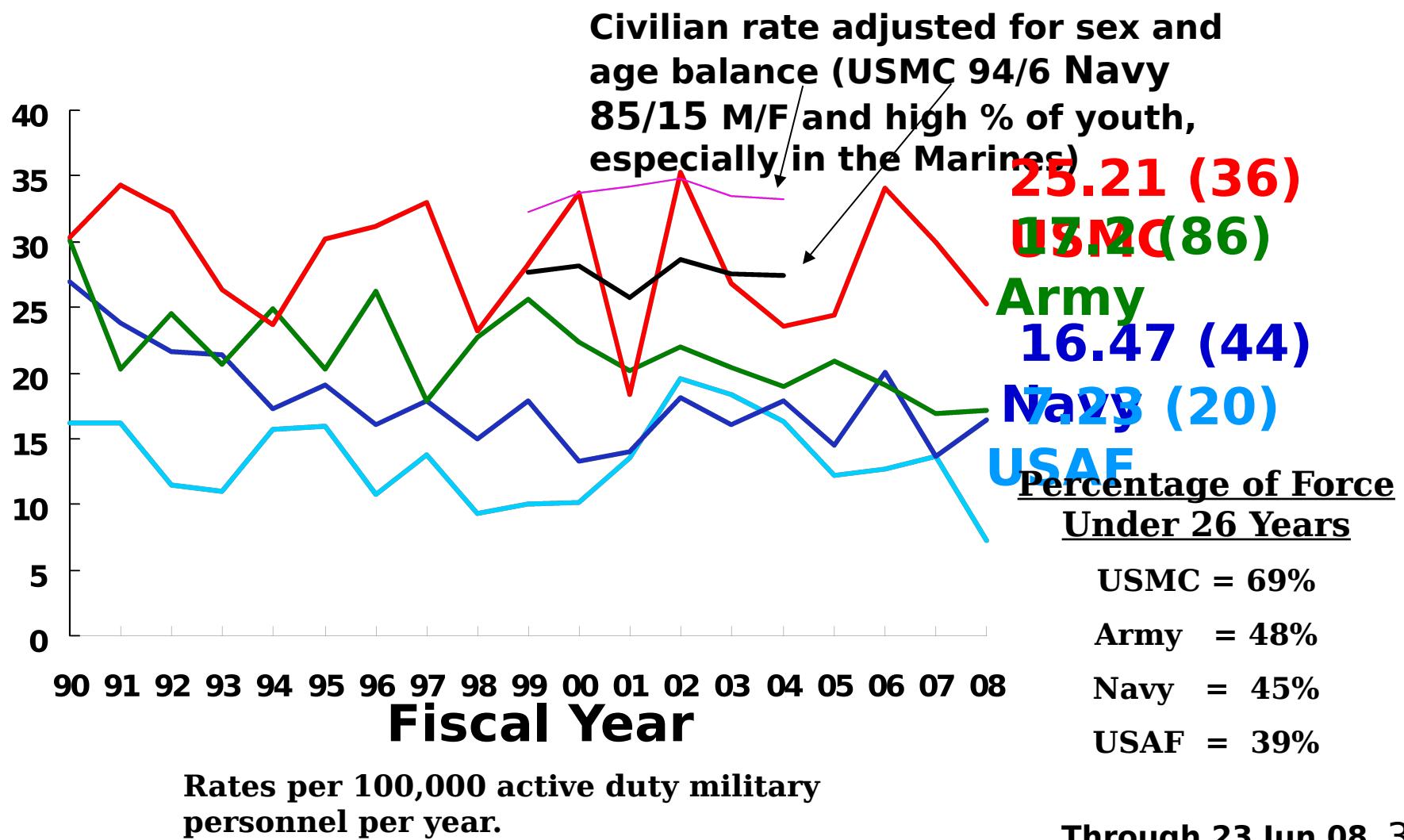
FY06: 144 (USN - 78) / (USMC - 66)

DECISION-BASED ERRORS



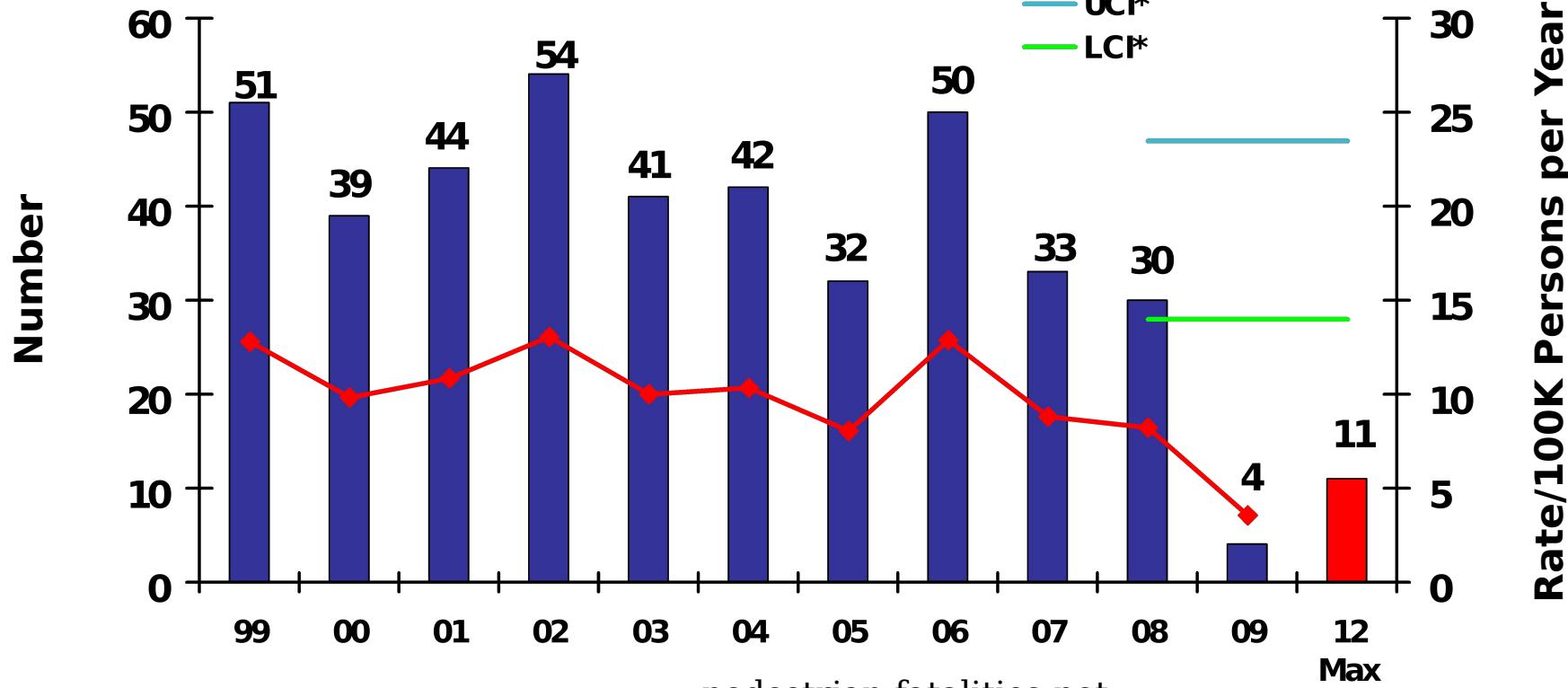
Armed Forces Traffic Death Rates

(FY90-08)





4-WHEEL PMV FATALITIES



Jan 08

CLASS A FATALITIES/FATALITY RATE FY COMPARISON: 4 / 3.52

11 / 9.68

FY08 FATALITIES/FATALITY RATE: 30 / 8.24

10-YEAR AVERAGE (FY99-08) FATALITIES/FATALITY RATE: 41.6 / 10.51

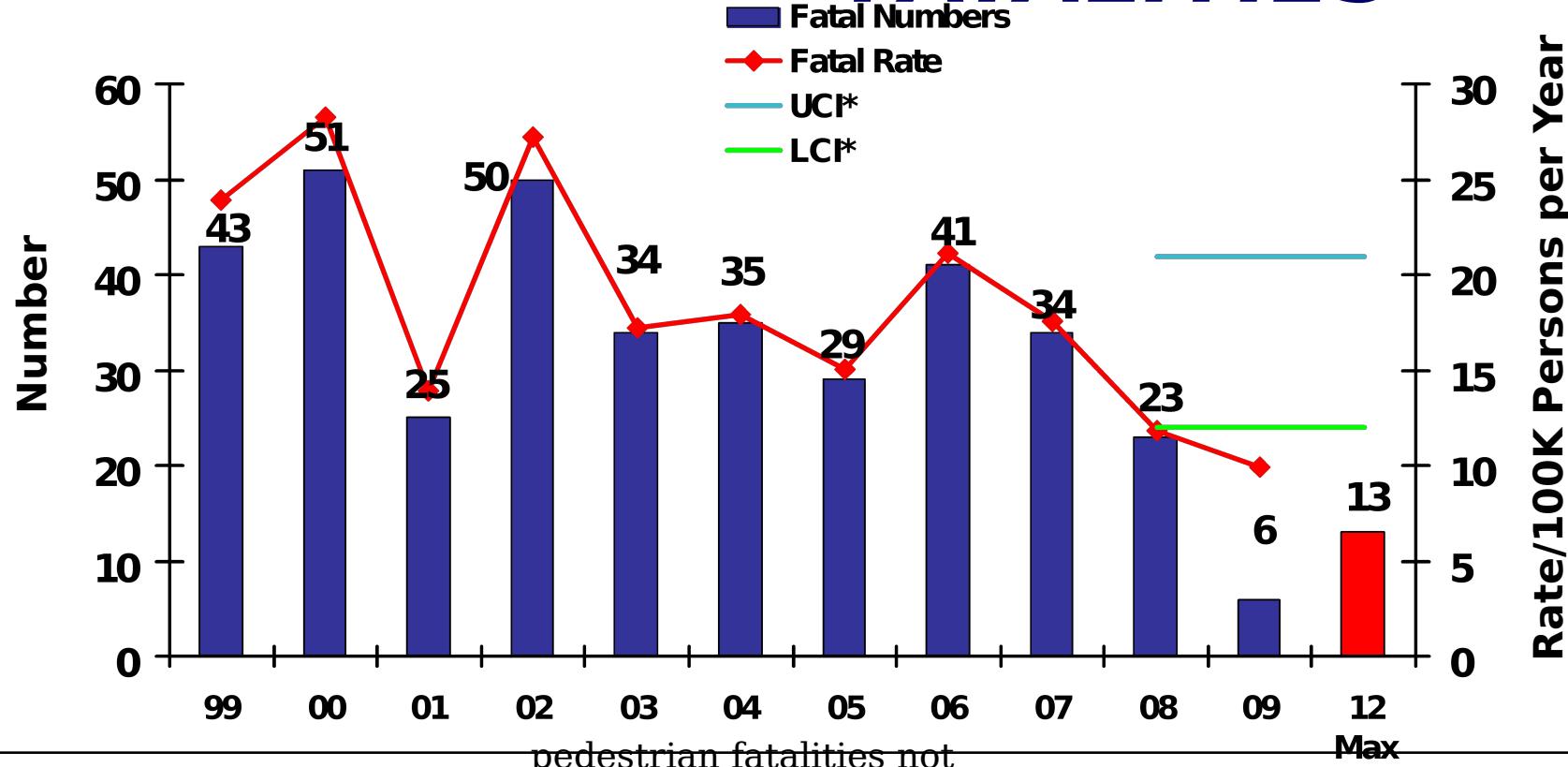
*see last slide for definition of UCI/LCI

23 Jan 09

23



4-WHEEL PMV FATALITIES



pedestrian fatalities not included

Max

23 Jan 09

23

Jan 08

CLASS A FATALITIES/FATALITY RATE FY COMPARISON: 6 / 9.88

8 /

13.18

FY08

FATALITIES/FATALITY RATE: 23 / 11.81

10-YEAR AVERAGE (FY99-08) FATALITIES/FATALITY RATE: 36.5 / 19.29

*see last slide for definition of UCI/LCI

10 Apr 07

Fleet Best Practices - PMV

1. Understand who your risk takers are and help them manage risk; engaged mentorship
2. Recognize that becoming a safe driver is part of a young person's maturing process and is not complete until age 25
3. Use the Traffic Safety Toolbox on the Safety Center Website to help reduce mishaps
4. Engage in partnerships with local community. (Click It or Ticket, *You Drink, You Drive, You Lose*, MADD)
5. Solicit family members to help keep loved ones safe with letters home

How about the motorcyclist?



Hold On



AUG 30 2002
4:28:47 PM

Motorcycle Types



Sport Touring 1100-1800cc
450-650lb, High performance



Super Sport 650-1100cc
290-350lb, High performance



Sport Unclad 650-1100cc
290-350lb, High performance



Dirt Bike 50-650cc
High ground clearance, not road ready



Standard 650-1800cc,
700-1200lb, High power



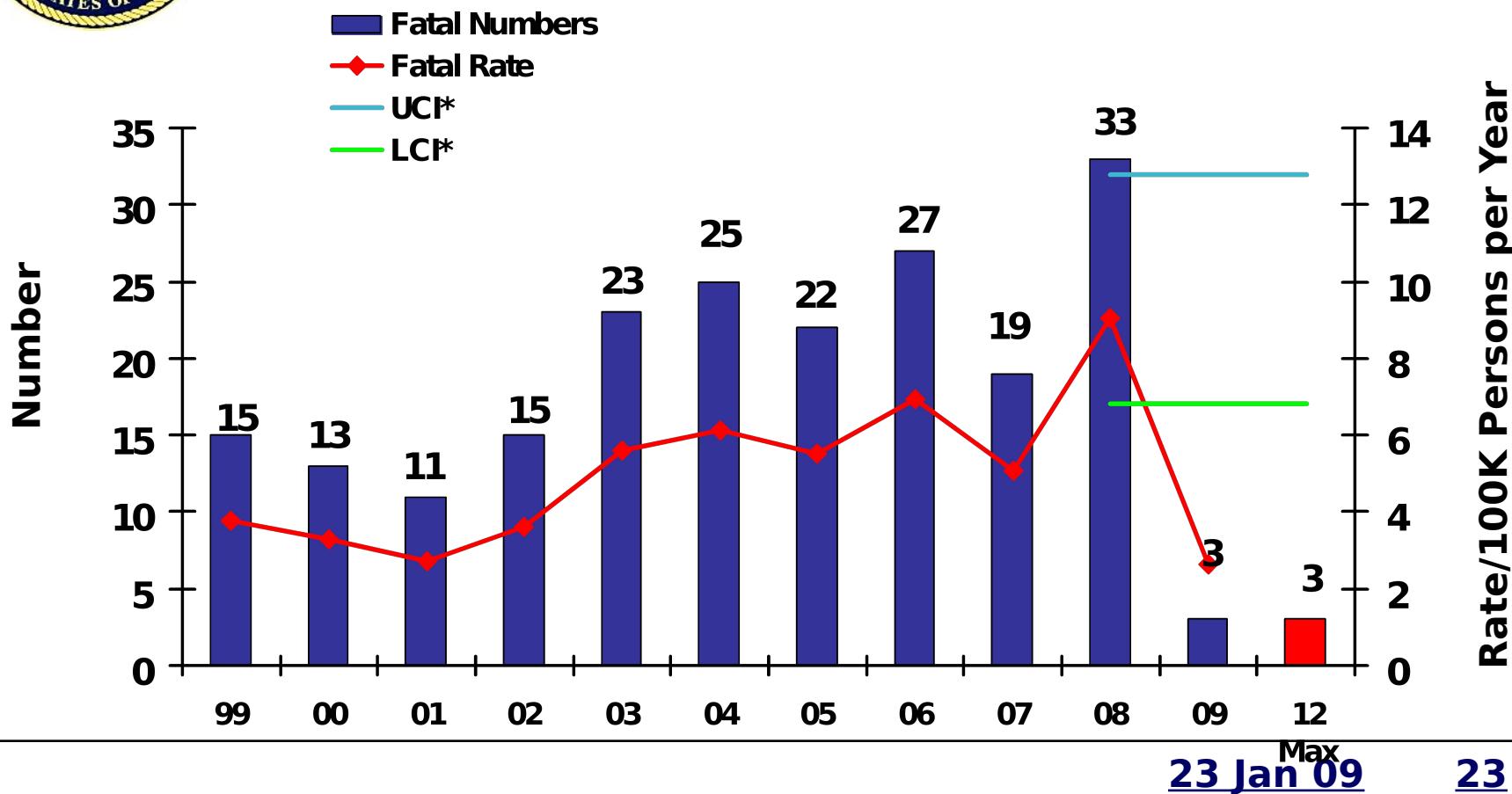
Intro Bike 125-500cc,
200-500lb



Scooters 50-650cc



MOTORCYCLE PMV FATALITIES



Jan 08

CLASS A FATALITIES/FATALITY RATE FY COMPARISON: $3 / 2.64$ $6 / 5.28$

FATALITIES/FATALITY RATE: $33 / 9.06$

10-YEAR AVERAGE (FY99-08) FATALITIES/FATALITY RATE: $20.3 / 5.13$

*see last slide for definition of UCI/LCI

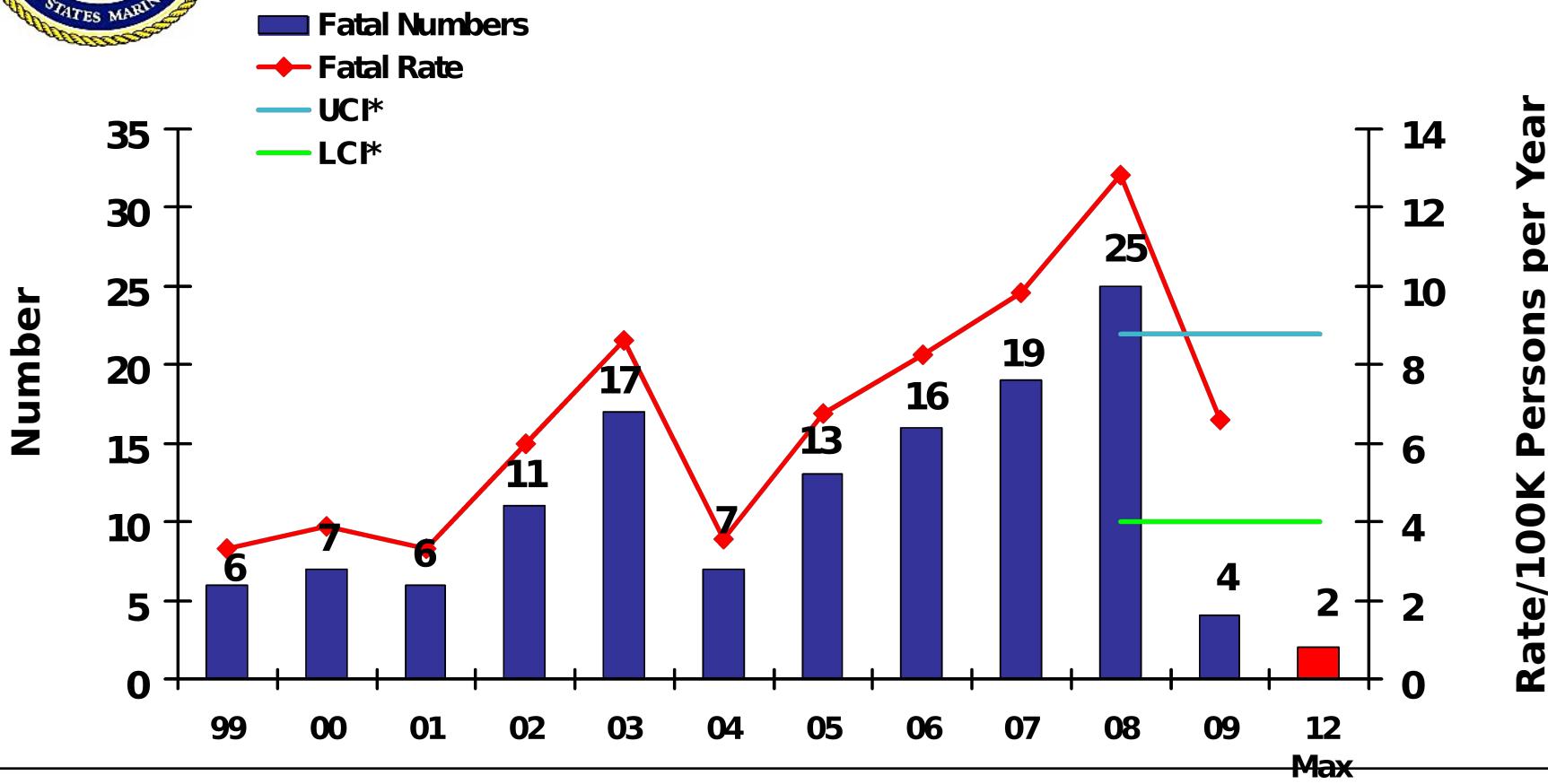
Max
23 Jan 09

23

20 Apr 07



MOTORCYCLE PMV FATALITIES



Jan 08

CLASS A FATALITIES/FATALITY RATE FY COMPARISON:

9.88

23 Jan 09

4 / 6.59

FY08

23

6 /

FATALITIES/FATALITY RATE: 25 / 12.84

10-YEAR AVERAGE (FY99-08) FATALITIES/FATALITY RATE: 12.7 / 6.71

*see last slide for definition of UCI/LCI

MOTORCYCLE SAFETY

Issue: Sport Bike fatalities increasing rapidly

FY07: 37 Fatalities, 57% Sport Bikes

FY08: 18 Fatalities, 100% Sport Bikes
No Sport Bike Training

Initiative: Develop and provide Sport Bike Training

Nov 07: NSC, CMC(SD) and MSF coordination

Dec 08: SECNAV briefed

Initial course Beta tests

Jan 08: Instructor course Beta tests

Feb 08: Curriculum finalized

Mar 08: MSF production of course materials

Apr 08: Course IOC - RiderCoach Trainer

Certifications

May 08: RiderCoach Trainers qualify Rider

Coaches in MSBC

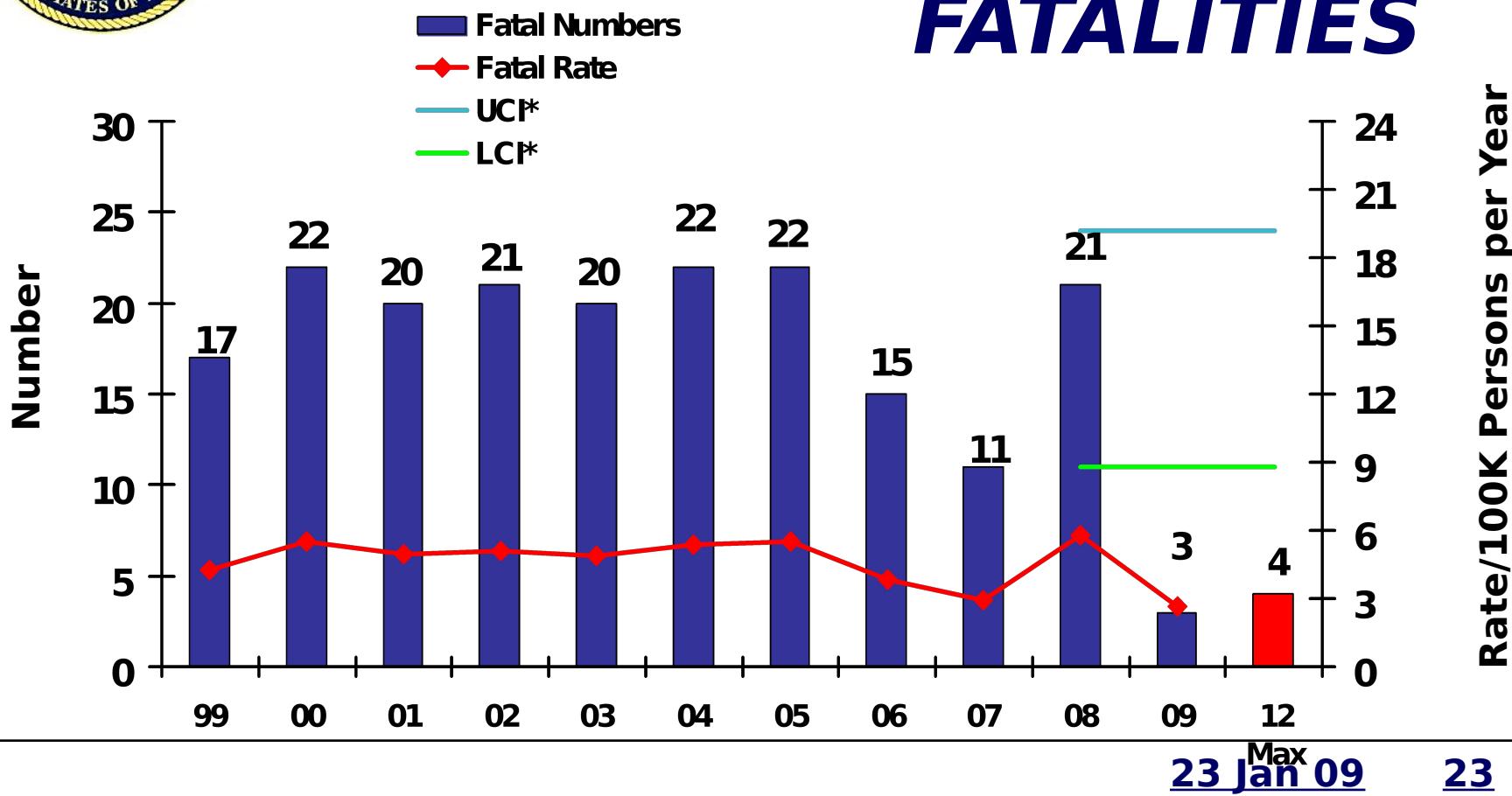
Jun 08: Rider Coaches begin training students in

**What hazards exist here?
Who is looking out for whom?**





OFF-DUTY/REC FATALITIES



Jan 08

CLASS A FATALITIES/FATALITY RATE FY COMPARISON: 3 / 2.64 7 /
6.16

RATE: 21 / 5.77

10-YEAR AVERAGE (FY99-08) FATALITIES/FATALITY RATE: 19.1 / 4.82

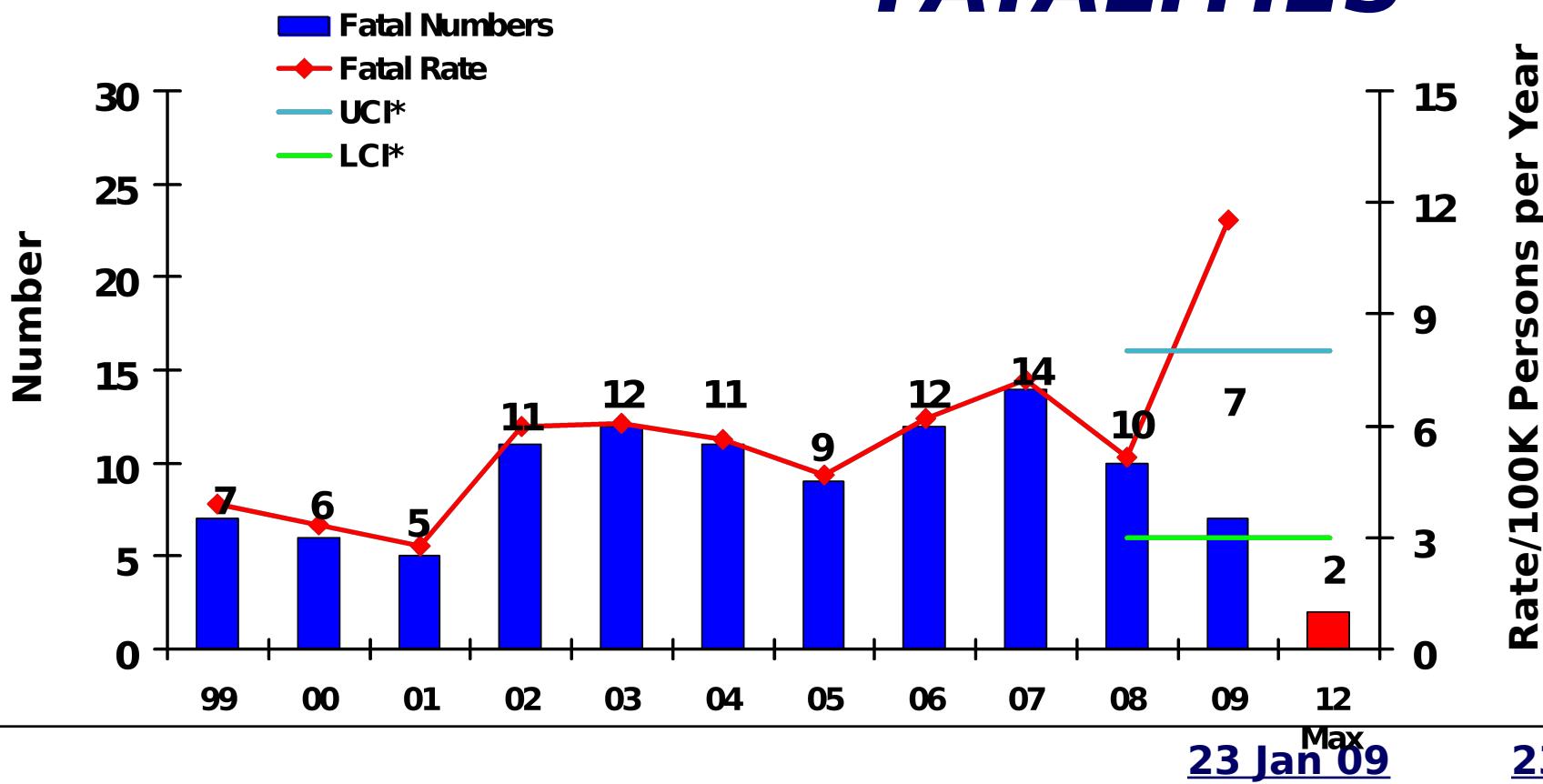
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Max
23 Jan 09

23



OFF-DUTY/REC FATALITIES



Jan 08

CLASS A FATALITIES/FATALITY RATE FY COMPARISON: 7 / 11.53 6 / 9.88

RATE: 10 / 5.14

10-YEAR AVERAGE (FY99-08) FATALITIES/FATALITY RATE: 9.7 / 5.13

*see last slide for definition of UCI/LCI

23 Jan 09

23

Best Fleet Practices - Off-Duty Rec

1. Ensure all supervisors are engaged in Risk Management and Recreation, Athletics and Home Safety programs.
2. RAHS Program Managers – Ensure command personnel attend seasonal hazard awareness training.
3. Employ the risk management process during all on and off-duty activities.
4. Use Individual Off-Duty Risk Assessment Form to assess behavior factors and indicators related to off-duty recreation mishaps.
5. Make use of qualification training and skills test provided by MWR prior to using their facilities and

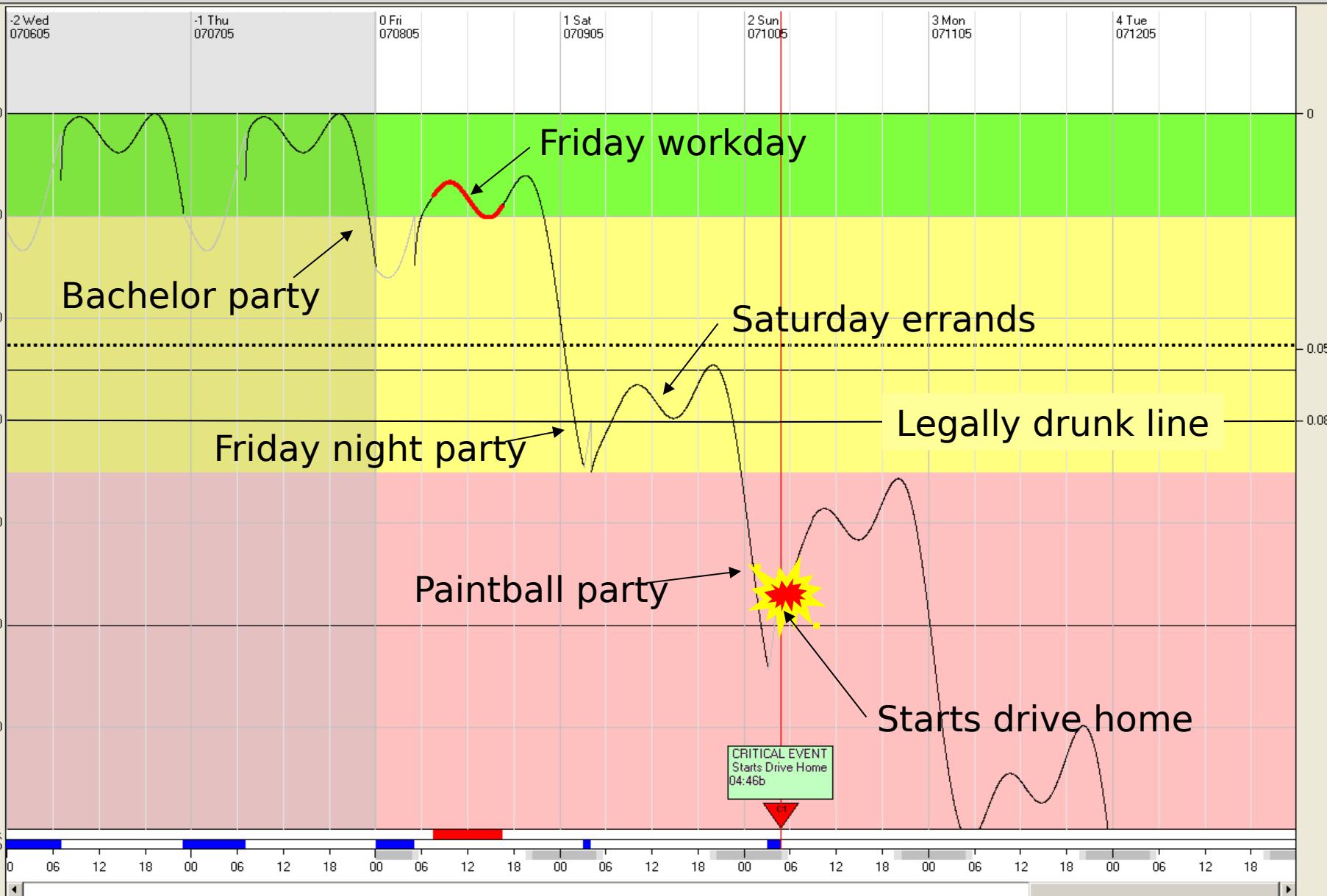


DRIVECAM

3 Golden
Eagles

Fatigue Case Study

- An E-5 went to a bachelor party until midnight, slept five hours, then went to work. Toiled all day, then went on leave.
- Drove 120 miles to a party and boogalooed until three o'clock in the morning. Slept for an hour on the way back, ran errands all day, met some friends for a midnight game of paintball that lasted once again until that magical hour of 0300.
- Headed home at 0445. Pulled over within 30 minutes to stretch and yawn.
- He then got back behind the wheel, fell asleep on a causeway, veered off the road and ran into two guard rails. His pickup truck went airborne and splashed down into the bay below.
- The sailor came to, released his seat belt, crawled through a broken window and swam to a pylon. Fortunately, a passing motorist had seen the drama and called emergency services.



Effective Use of Risk Management



ORM: *Risk Management **Not** Risk Avoidance*

Five Steps

1. Identify
Hazards



5. Supervise

2. Assess
Hazards

4. Implement
Controls

3. Make Risk
Decisions

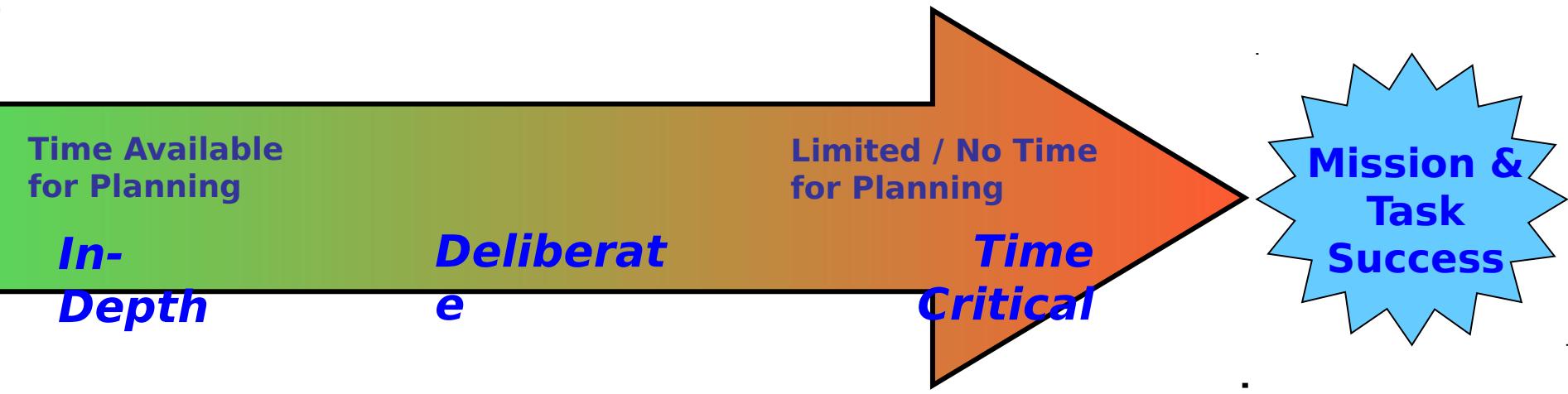
- Easy, common-sense process
- Mind-set
- Way of life – On and Off Duty
- Operating discipline
- Process must be taught
- Must institutionalize ORM – it's not today

YOU CAN'T “ORM” SOMETHING THAT'S STUPID, TO SOMETHING THAT'S SMART!!!

Risk Management Levels

Strategic

Tactical



- Charts/Flips
- Ship / Aircraft (Systems Safety)
- Instructions (3710, 5102, 4790)
- NATOPS
- Equipment (PPE)
- Training

- Ops Planning
- SOPs
- Briefings
- CO Guidance
- OJT

- Mission Execution Checklist
- Change Management (Environment, Mission, Emergency Procedures, Crew Change)
- Equipment / Systems Degradation

Assess
What is Going on
Balance
Your Options
Communicat
Risk & Intentions

Controls from one level become resources for the next



Risk Assessment System

TRACS - Total Risk Assessment and Control

- Proactive, intuitive, easy-to-use web-based application
- Allows user to assess, manage and report on hazards, risks, and controls.
- Utilizes library construct to store completed risk assessments
 - Private and Public
 - Searchable
- All data transmitted between you and TRACS is made secure by SSL

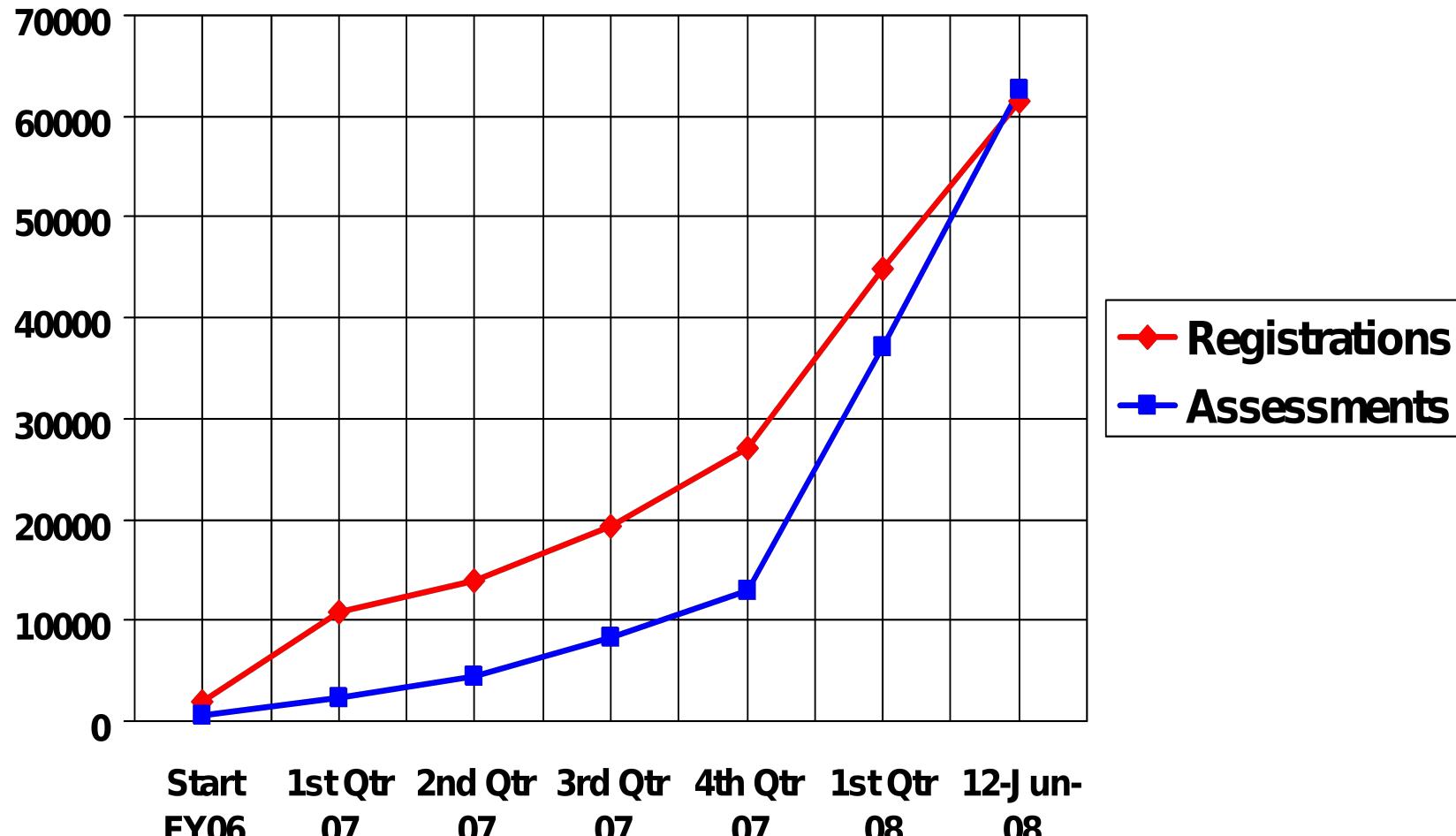


Travel Risk Planning System

TRiPS - Travel Risk Planning System

- Delivered to the Naval Safety Center for Fleet use in September 2006; based on ASMIS-2 Army Safety Management Information System
- A click away on ***www.safetycenter.navy.mil***
- Provides ORM trip assessment and actual mishap cases relevant to planned trip. Risk values/models based on NTSB data
- Trip map, times, distances and other products improve ***supervisor interaction***; CBT course content designed to help change behavior

Travel Risk Planning System



TRiPS usage increasing.

Recommendations to Improve Safety

1. Naval Safety Center Website - Tools Are There!

- Traffic Safety Toolbox
- Web-Enabled Safety System (WESS) - Online mishap reporting / database
- Leave and Liberty Risk Assessments

2. Establish a SOLID Welcome Aboard, Sponsorship/Mentorship Program.

- First impressions are lasting ones
- On and Off duty activities must be addressed

3. Identify “High-Risk” personnel within your command.

- Engage leadership with subordinate personnel
- Provide awareness training on the popular high-risk activities participated by your crew and mentor high-risk personnel
- Identify motorcyclist, confirm required training is complete; add additional training requirements where appropriate

Recommendations to Improve Safety

4. Be Proactive and Involved.

- Schedule a Culture Workshop / Safety Survey**
- Distribute “Safe Ride” taxi cards**
- Conduct safety stand-downs when needed and pre-holiday**
- Require TRiPS and leave chit risk assessments prior to authorizing leave**

5. Maintain high-visibility within command.

- Enforce Established Standards- defined command safety policy**
- Treat every mishap the same (PMV/Off-Duty Fatality hurts command as much as an Operational Fatality)**
- Correct safety deficiencies immediately**
- Hold yourself and your personnel ACCOUNTABLE**

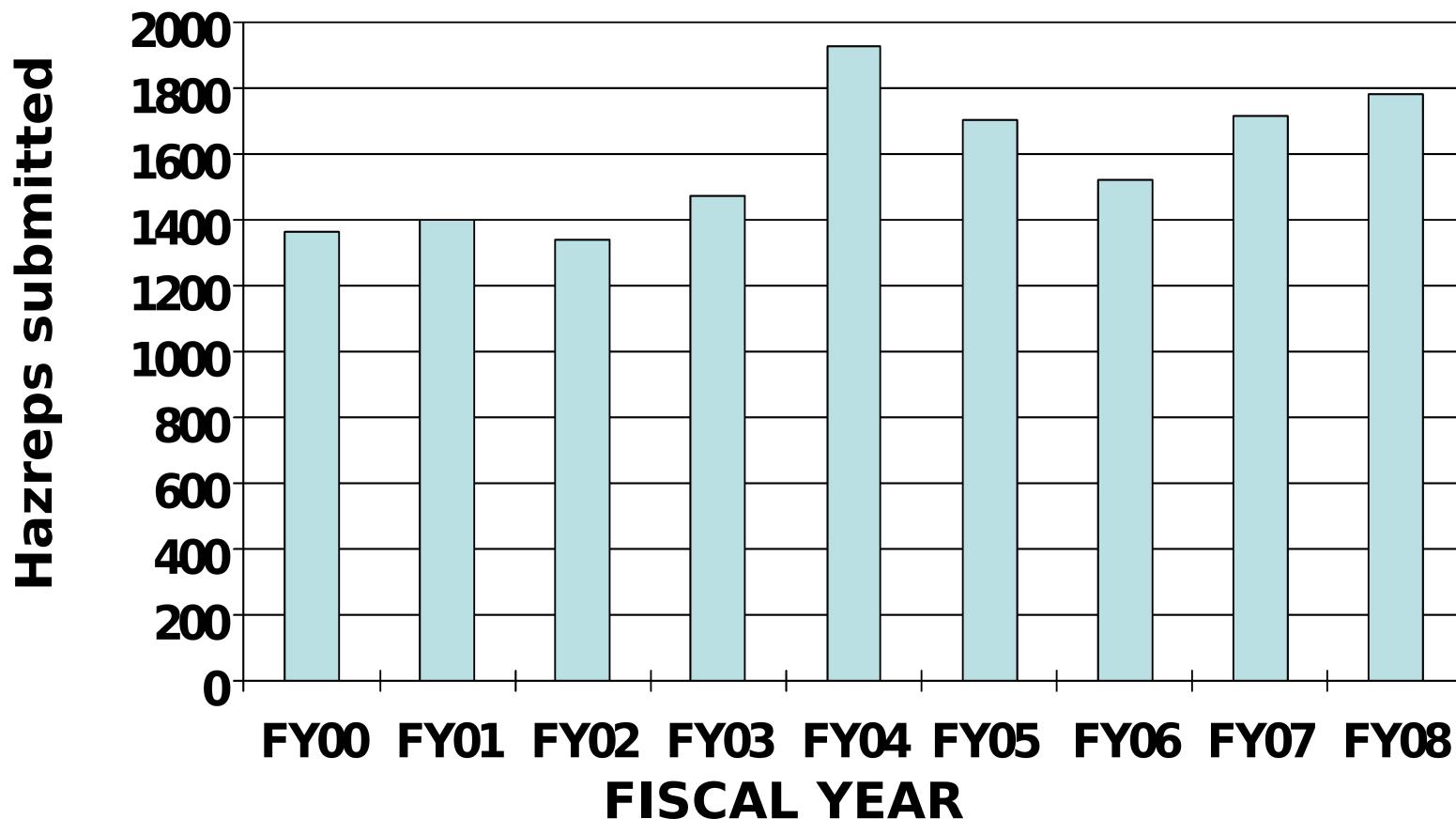
6. Expect what you INSPECT.

- Verify command policies are understood and followed**
- Demonstrate daily commitment to safety. If it's visibly important to you it will be to your crew.**

HAZREP Culture: Where We Want to Be

- **Establish an open environment for reporting**
 - Fleet Education on DON & NSC Objective
 - Instruction revision ✓ **OPNAVINST 3750.6R Ch 4 rewrite**
 - Training to encourage fleet support during surveys
 - Potential “Safety Hotline” for anonymous reporting
- **Encourage and reward reporting of hazards, near-misses, and lessons learned** ✓ **OPNAVINST 1650.28A recognizes HAZREP submissions for Safety “S”**
- **Identify leading indicators, maximize awareness, and prevent similar mishaps in the future**
 - Create measures of effectiveness to grade environment for hazard reporting
 - Database capabilities

Aviation Hazard Reports



What We Do for the Fleet

Naval Safety Center



Providing aviation, afloat, and shore support to Navy and Marine Corps commands



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Mishap Investigations

Surveys

Assist Visits

Data Analysis

Workshops

Publications

Website

Presentations

Exhibits

Call 757-444-3520 (DSN 564) or visit our website: www.safetycenter.navy.mil

ON THE ROAD

- Safety surveys
- ORM unit training
- Mishap investigations
- PCO briefings
- Safety Seminar/Safety Symposium
- NAVOSHENVTRACEN Safety & Occupational Health Training

AWARENESS

- Fleet Analysis
- Magazines printed/distributed (473,000 copies)
- Interactive CD's
- Acquisition process in-roads
- Safety advisories
- Customer information requests (3,600+ database queries per month)
- Safety Center web page

Data Collection / Dissemination



- An integrated system to web enable the data collection and information dissemination safety business processes for Navy & Marine Corps.
- Allow data transfer with DOD, other Services & other systems with a stake in safety
- Allow safety customers direct access, on-line, to safety data to target mishap prevention.

DATA FUSION BENEFITS THE FLEET!

NSC Website: Your Valuable Resource

NAVAL SAFETY CENTER
Work, Play, Live...Safely!

Home | Allsat | OSH | Adhore | Aviation | Media | Acquisition | Resources | Training | Departments | Staff | Site Map

RESOURCES

- Executive Summary
- EMO Secure Site
- Bearing Conservation Toolbox
- POD Notes
- POD Images
- Presentations
- Safe Tips
- Safety Toolbox
- Statistics
- Success Stories
- Traffic Safety Toolbox
- TRIPS (Travel Risk Planning System)
- FOIA Request - Navy
- FOIA Request - ISIC
- Best Practices
- Best Practices Feedback Form

SERVICES

- Culture Workshops
- Safety Surveys

POPULAR

- Friday Funnies
- Photo of the Week

SEARCH OUR SITE

Show 10 results per page.

Submit Search | Reset

You can also use our Site Map to get to the main sections of our site.

CONTACT US

Naval Safety Center
375 A Street
Norfolk, VA 23511
(757) 444-3520 // (DSN 664)
Contact the Webmaster or
Public Affairs Officer

NEW COURSE!

The Navy and Marine Corps have teamed with the Motorcycle Safety Foundation and developed a course tailored to sport bikes. Tragically, sport bike mishaps are growing at an unacceptable rate. This course will help novice or experienced riders. Sign up for one through your local safety office or for more information, visit the Motorcycle Safety Information page. View the full 5-minute promo.



WHAT'S NEW

New best practices:
Ladder Trends - Repairs (new)
Video - Safety and Hornet (2008 Update)
Motorcycle Training POCS
V-2 Pilots Save Aircraft (new)

Weather Update
Fall Campaign 2008
WESS News
New Caption Contest
Drive Safety Week Week

NETS Summer Road Safety Tips
MSFTA Planner: Click It or Ticket
Signs of the Times: #4 Ice presentation
Aviation Mishap Workshop
CMC Toolbox

LATEST PODCASTS

From the Archives of the Friday Funnies: "Calibrating Your Risk-o-Matic"
From the Archives of the Friday Funnies: "The Adventure of the 1,000-Pound Bear Trap" #4

LATEST VODCASTS

Friday Funnies News Desk - Episode 4
Friday Funnies News Desk - Episode 3

NEW ARTICLES/VIDEOS

New Military Sport Bike Training Unveiled in Norfolk
Admiral Johnson discusses TCRM

NEWEST MAGAZINE EDITIONS

July-August Approach
Summer Mech
2008 RIDE

POPULAR PLACES

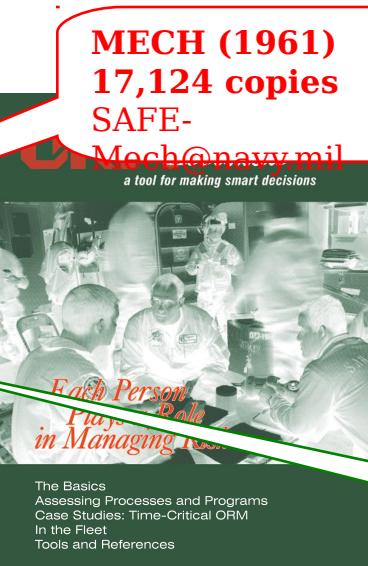
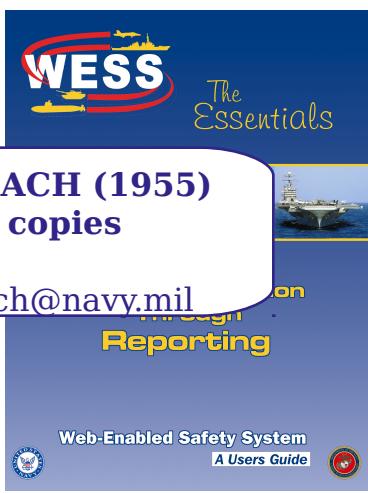
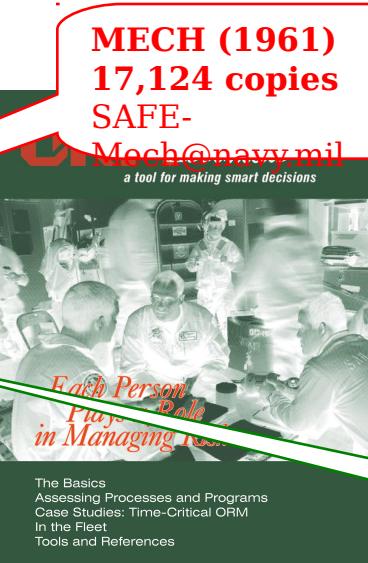
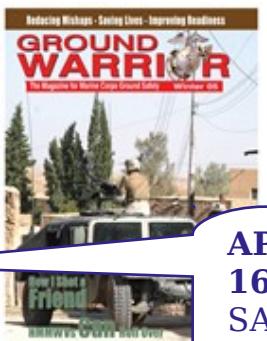
TRIPS | Motorcycle Training POC | Fall SAFETY CAMPAIGN | QESB | HAZARD CONTROL CENTER | WEBSITE | PMV Investigation | BEST PRACTICES

JSSC | Motorcycle Census | ORM | POA&M | POA&M

Last Modified: Tuesday, September 09, 2008
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Our Magazines Reach Every Community

“Tell Your Story”



APPROACH (1955)
16,183 copies
SAFE-
Approach@navy.mil

MECH (1961)
17,124 copies

SAFE-
Mech@navy.mil

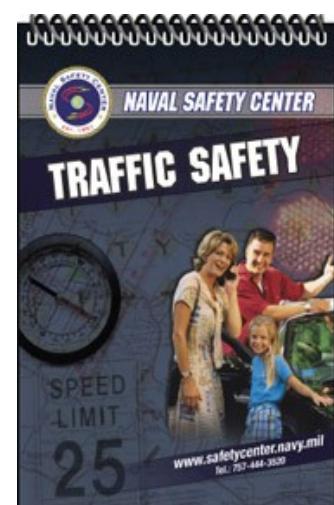
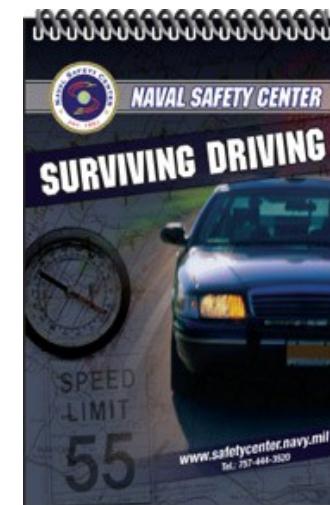
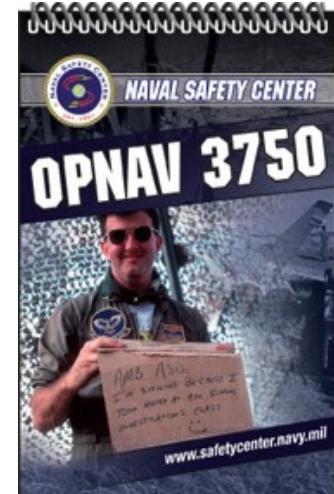
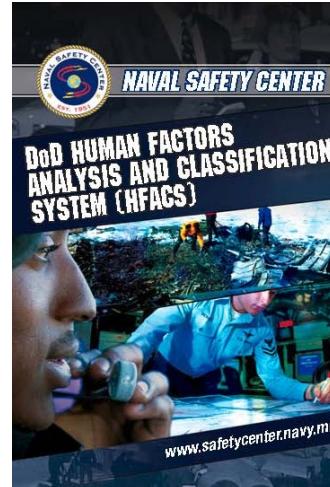
- Focus on time-critical ORM
- Includes basic and advanced concepts
- Real-life scenarios and analysis
- Success stories, lessons learned from fleet units

Tools, references and links

- **On the Job**
- **SEA&SHORE (2004)**
30,442 copies
SAFE-
SeaShore@navy.mil
- Detailed user's guide
- Includes FAQs, guidance for common problems
- Flow chart of complete reporting and QA process
- Covers both 3750 and 5102 topics, incl. aviation, motor vehicles, explosives, diving, OSH and parachute
- **Distribution of 3K copies to 1,560 addresses in July 2007**

QuickSeries Guides

- Resource-intensive flip books
- Data, guidance, tools, reference material
- Well-received by fleet
- Sent on request
- Motorcycle rider guide in work





A MISHAP-FREE NAVY+MARINE CORPS *Team*

Is It Possible??



Navy Mishap Free Squadrons (FY-07)

* *No reported Class A/B/C , FM/FRM/AGM*

HC-2	HC-85	HS-4	HS-10
HS11	HS15	HSL3	HSL40
HSL41	HSL-42	HSL-43	HSL-44
HSL-45	HSL-47	HSL-48	HSL-51
HSL-60	VAQ-129	VAQ-130	VAQ-132
VAQ-133	VAQ-134	VAQ-136	VAQ-137
VAQ-138	VAQ-141	VAW-112	VAW-115
VAW-117	VAW-121	VAW-123	VAW-124
VAW-125	VAW-126	VFA-2	VFA-14
VFA-22	VFA-32	VFA-34	VFA-37
VFA-87	VFA-94	VFA-102	VFA-113
VFA-115	VFA-125	VFA-136	VFA-137
VFA-147	VFA-151	VFA-154	VFA-211
VFA-213	VP-1	VP-4	VP-5
VP-9	VP-26	VP-30	VP-40
VP-46	VP-62	VP-69	VPU-2
VQ-3	VQ-7	VS-22	VT-3
VT-4	VT-6	VT-7	VT-10
VT-22	VT-27	VT-31	VT-35
HT-8	HT-18	HT-28	VX-1



The Challenge to You

- **Engaged Leadership**
- **Support and actively promote integration of ORM**
 - On and Off Duty
 - Use Deliberate Assessment Process
 - Integrate TCRM - “What’s different today?”
 - Support ORM Assessment at all levels
- **Use the resources and tools available**
- **Establish an environment where hazards can be identified by anyone at any time**
- **Provide feedback and share**
- **Work together to lookout for our shipmates (on and off duty) and preserve Navy resources in order to ensure mission readiness and help eliminate these...**

QUESTIONS?
COMMENTS!

